

CLAIMS

What is claimed is:

1. A method for triggerless mobile group dialing, the method comprising:  
at a signaling message routing node:
  - 5 (a) receiving and routing a plurality of call signaling messages;
  - (b) intercepting, from the plurality of call signaling messages, a call signaling message for a call directed to a mobile dialing code used to identify a called mobile subscriber within a mobile dialing group;
  - 10 (c) determining a called party address based on the mobile dialing code;
  - (d) replacing the mobile dialing code in the message with the called party address; and
  - (e) routing the call signaling message to its intended destination.
- 15 2. The method of claim 1 wherein intercepting a call signaling message includes intercepting a send routing information message.
3. The method of claim 1 wherein intercepting a call signaling message includes intercepting a location request message.
4. The method of claim 1 wherein intercepting a call signaling message  
20 includes intercepting an IAM message.
5. The method of claim 1 wherein intercepting a call signaling message includes intercepting a call signaling message including calling party dialed digits and wherein determining a called party address based on the mobile dialing code includes determining a called party address

based on a mobile dialing group ID associated with the calling party dialed digits and the mobile dialing code.

6. The method of claim 1 wherein intercepting a call signaling message includes intercepting a call signaling message including calling party dialed digits and wherein determining a called party address based on the mobile dialing code includes determining a called party address based on the combination of the calling party dialed digits and the mobile dialing code without using a mobile dialing group ID.
7. The method of claim 6 wherein the mobile dialing group comprises a subscriber-specific dialing group corresponding to the calling party dialed digits.
8. The method of claim 6 wherein the mobile dialing group corresponds to a range of digits in which the calling party dialed digits fall.
9. The method of claim 1 wherein intercepting a call signaling message includes intercepting a call signaling message that does not include calling party dialed digits and wherein determining a called party address includes forcing an originating switch to send an IAM message to a gateway mobile switching center, extracting calling party dialed digits from the IAM message, and wherein determining a called party address based on the mobile dialing group and the mobile dialing code includes determining the called party address based on a mobile dialing group ID associated with the calling party dialed digits and the mobile dialing code.

10. The method of claim 1 wherein intercepting a call signaling message includes intercepting a call signaling message that does not include calling party dialed digits and wherein determining a called party address includes forcing an originating switch to send an IAM message  
5 to a gateway mobile switching center, extracting calling party dialed digits from the IAM message, and wherein determining a called party address based on the mobile dialing code includes determining the called party address based the combination of calling party dialed digits and the mobile dialing code without using a mobile dialing group ID.
- 10 11. The method of claim 1 wherein intercepting a call signaling message includes intercepting a call signaling message addressed to the STP.
12. The method of claim 1 wherein intercepting a call signaling message includes intercepting a mobile call signaling message addressed to an HLR.
- 15 13. The method of claim 1 wherein determining a called party address includes determining a called party address without querying an intelligent network (IN) or CAMEL database external to the routing node.
14. The method of claim 1 wherein determining a called party address includes determining an E.164 address for the mobile call signaling  
20 message.
15. The method of claim 1 wherein routing the call signaling message to its intended destination includes performing global title translation using the called party address and routing the call signaling message based on the result of the global title translation.

16. The method of claim 1 wherein routing the call signaling message to its intended destination includes message transfer part (MTP) routing the call signaling message to its intended destination.
17. The method of claim 1 comprising screening call signaling messages that do not have short codes and excluding these messages from short code processing as defined by steps (b)-(e).
18. The method of claim 17 wherein screening call signaling messages that do not have short codes includes examining a numbering plan parameter in the mobile call signaling messages.
19. The method of claim 17 wherein screening the call signaling messages that do not have short codes includes examining the length of the called party address in the call signaling messages.
20. A signaling message routing node for triggerless mobile group dialing, the signaling message routing node comprising:
  - (a) a communications module for sending and receiving signaling messages and for intercepting signaling messages relating to calls directed to mobile subscribers and requiring triggerless mobile dialing group processing;
  - (b) a triggerless mobile dialing code translation function operatively associated with the communications module for receiving the signaling messages requiring triggerless mobile dialing group processing and for translating mobile dialing codes in the signaling messages to called party addresses based on mobile dialing groups associated with the signaling messages; and

(c) a mobile dialing code database accessible by the triggerless mobile dialing code translation function and including information for translating the mobile dialing codes to called party addresses.

21. The signaling message routing node of claim 20 wherein the  
5 communications module is adapted to intercept predetermined SS7 call signaling messages sent over SS7 signaling links for triggerless mobile dialing code processing.
22. The signaling message routing node of claim 20 wherein the  
10 communications module is adapted to intercept predetermined SS7 call signaling messages sent over IP signaling links for triggerless mobile dialing code processing.
23. The signaling message routing node of claim 20 wherein the  
15 communications module is adapted to intercept predetermined IP telephony call signaling messages for triggerless mobile dialing code processing.
24. The signaling message routing node of claim 20 wherein the triggerless  
mobile dialing code translation function is adapted to determine a mobile  
dialing group ID associated with each of the intercepted signaling  
20 messages and to translate the mobile dialing code in each intercepted signaling message into a called party address using the mobile dialing code and the mobile dialing group ID.
25. The signaling message routing node of claim 20 wherein the triggerless  
mobile dialing code translation function is adapted to extract a calling  
party address from each of the intercepted signaling messages and to

translate the mobile dialing code in each intercepted signaling message into a called party address using the mobile dialing code and the calling party address combination.

26. The signaling message routing node of claim 25 wherein the mobile  
5 dialing group comprises a subscriber-specific dialing group corresponding to the calling party dialed digits.
27. The signaling message routing node of claim 25 wherein the mobile dialing group corresponds to a range of digits in which the calling party dialed digits fall.
- 10 28. The signaling message routing node of claim 20 wherein the triggerless mobile dialing code translation function is adapted to intercept first call signaling messages that include mobile dialing codes and that do not contain calling party addresses, to force originators of the first call signaling messages to send second call signaling messages that include  
15 mobile dialing codes and calling party addresses, and to translate the mobile dialing codes in the second call signaling messages into called party addresses using the calling party addresses and the mobile dialing codes.
29. The signaling message routing node of claim 20 wherein the mobile  
20 dialing code database includes a first table for mapping calling party information to dialing group IDs and a second table for mapping mobile dialing codes and dialing group IDs to called party numbers.
30. The signaling message routing node of claim 29 wherein the mobile dialing code translation database includes a third table for mapping

mobile dialing codes to gateway mobile switching center (GMSC) identifiers.

31. The signaling message routing node of claim 20 comprising a gateway screening function operatively associated with the communications module for screening messages for mobile dialing code translation processing.
32. The signaling message routing node of claim 31 wherein the gateway screening function is adapted to exclude messages from mobile dialing code translation processing in response to determining that the signaling messages do not include mobile dialing codes.
33. The signaling message routing node of claim 31 wherein the gateway screening function is adapted to exclude messages from mobile dialing code translation processing based on the length of a called party dialed digits parameter in each of the messages.
34. The signaling message routing node of claim 31 wherein the gateway screening function is adapted to exclude messages from mobile dialing code translation processing based on numbering plan parameter in each of the messages.
35. The signaling message routing node of claim 20 wherein the communications module, the mobile dialing code translation function, and the mobile dialing code translation database are components of a signal transfer point.
36. The signaling message routing node of claim 20 wherein the communications module, the mobile dialing code translation function,

and the mobile dialing code translation database are components of an SS7/IP gateway.

37. The signaling message routing node of claim 20 wherein the mobile dialing codes in the mobile dialing code translation database are customizable by end users.
38. The signaling message routing node of claim 20 wherein the triggerless mobile dialing group translation function is adapted to obtain the called party address without querying an intelligent network (IN) or CAMEL database external to the signaling message routing node.
39. A computer program product comprising computer-executable instructions embodied in a computer-readable medium for performing steps comprising:
- (a) receiving and routing a plurality of call signaling messages;
  - (b) intercepting, from the plurality of call signaling messages, a call signaling message for a call directed to a mobile dialing code used to identify a called mobile subscriber within a mobile dialing group;
  - (c) determining a called party address based on the mobile dialing code;
  - (d) replacing the mobile dialing code in the message with the called party address; and
  - (e) routing the call signaling message to its intended destination.



40. The computer program product of claim 39 wherein intercepting a call signaling message includes intercepting a send routing information message.
41. The computer program product of claim 39 wherein intercepting a call signaling message includes intercepting a location request message.
42. The computer program product of claim 39 wherein intercepting a call signaling message includes intercepting an IAM message.
43. The computer program product of claim 39 wherein intercepting a call signaling message includes intercepting a call signaling message including calling party dialed digits and wherein determining a called party address based on the mobile dialing code includes determining a called party address based on a mobile dialing group ID associated with the calling party dialed digits and the mobile dialing code.
44. The computer program product of claim 39 wherein intercepting a call signaling message includes intercepting a call signaling message including calling party dialed digits and wherein determining a called party address based on the mobile dialing code includes determining a called party address based on the combination of calling party dialed digits and the mobile dialing code.
45. The computer program product of claim 44 wherein the mobile dialing group comprises a subscriber-specific dialing group corresponding to the calling party dialed digits.

46. The computer program product of claim 44 wherein the mobile dialing group corresponds to a range of digits in which the calling party dialed digits fall.
47. The computer program product of claim 39 wherein intercepting a call signaling message includes intercepting a call signaling message that does not include calling party dialed digits and wherein determining a called party address includes forcing an originating switch to send an IAM message to a gateway mobile switching center, extracting calling party dialed digits from the IAM message, and wherein determining a called party address based on the mobile dialing group and the mobile dialing code includes determining the called party address based on a mobile dialing group ID associated with the calling party dialed digits and the mobile dialing code.
48. The computer program product of claim 39 wherein intercepting a call signaling message includes intercepting a call signaling message that does not include calling party dialed digits and wherein determining a called party address includes forcing an originating switch to send an IAM message to a gateway mobile switching center, extracting calling party dialed digits from the IAM message, and wherein determining a called party address based on the mobile dialing group and the mobile dialing code includes determining the called party address based the calling party dialed digits and the mobile dialing code.

49. The computer program product of claim 39 wherein intercepting a call signaling message includes intercepting a call signaling message addressed to the STP.
50. The computer program product of claim 39 wherein intercepting a call signaling message includes intercepting a mobile call signaling message addressed to an HLR.
51. The computer program product of claim 39 wherein determining a called party address includes determining an E.164 address for the mobile call signaling message.
52. The computer program product of claim 39 wherein routing the call signaling message to its intended destination includes performing global title translation using the called party address and routing the call signaling message based on the result of the global title translation.
53. The computer program product of claim 39 wherein routing the call signaling message to its intended destination includes message transfer part (MTP) routing the call signaling message to its intended destination.
54. The computer program product of claim 39 comprising screening call signaling messages that do not have short codes and excluding these messages from short code processing as defined by steps (b)-(e).
55. The computer program product of claim 54 wherein screening call signaling messages that do not have short codes includes examining a numbering plan parameter in the mobile call signaling messages.

56. The computer program product of claim 54 wherein screening the call signaling messages that do not have short codes includes examining the length of the called party address in the call signaling messages.
57. The computer program product of claim 39 wherein determining a called party address includes determining a called party address without  
5 querying an intelligent network (IN) or CAMEL database external to the routing node.